

## Freeform Search

**Database:**

US Patents Full-Text Database  
US Pre-Grant Publication Full-Text Database  
JPO Abstracts Database  
EPO Abstracts Database  
Derwent World Patents Index  
IBM Technical Disclosure Bulletins

**Term:**

L24 and (correct\$4 with imag\$4)

**Display:**  **Documents in Display Format:**  **Starting with Number** **Generate:** ☐ Hit List ☒ Hit Count ☐ Side by Side ☐ Image

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### Search History

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**DATE:** Tuesday, January 21, 2003   [Printable Copy](#)   [Create Case](#)

**Set Name Query**  
side by side

**Hit Count Set Name**  
result set

DB=USPT,PGPB,JPAB,EPAB,DWPI,TDBD; PLUR=YES; OP=ADJ

<u>L27</u>	L24 and (correct\$4 with imag\$4)	0	<u>L27</u>
<u>L26</u>	L24 and (microcoil or micro-coil or "micro coil")	0	<u>L26</u>
<u>L25</u>	5378987	11	<u>L25</u>
<u>L24</u>	5938600	6	<u>L24</u>
<u>L23</u>	6064206	6	<u>L23</u>
<u>L22</u>	L20 and (heat\$4)	3	<u>L22</u>
<u>L21</u>	L20 and (thermal\$3with image)	0	<u>L21</u>
<u>L20</u>	L19 and (thermal\$3)	3	<u>L20</u>
<u>L19</u>	L16 and (temperature)	5	<u>L19</u>
<u>L18</u>	L14 and ((referenc\$4 or calibrat\$4) with temperature)	0	<u>L18</u>
<u>L17</u>	L16 and ((referenc\$4 or calibrat\$4) with temperature)	0	<u>L17</u>
<u>L16</u>	L15 and (detail or structure or (body with part) or head or arm or wrist or lung or liver or heart or object or subject or knee or ankle or hand or abdomin or stomache or kidney)	5	<u>L16</u>
<u>L15</u>	L14 and ((referenc\$4 or calibrat\$4) with image)	5	<u>L15</u>
<u>L14</u>	L13 and (position\$4 or locat\$6 or site or zone or region or area)	46	<u>L14</u>
<u>L13</u>	L12 and (referenc\$4 or calibrat\$4)	46	<u>L13</u>
<u>L12</u>	L11 and (thermal\$3 or temperature or heat\$4)	49	<u>L12</u>
<u>L11</u>	L10 and (microcoil or micro-coil or "micro coil")	111	<u>L11</u>
<u>L10</u>	((magnetic adj resonance) or MRI or NMR)	140100	<u>L10</u>
<u>L9</u>	L8 and (signal or position\$4 or zone)	19	<u>L9</u>
<u>L8</u>	L7 and (correct\$6 with imag\$4)	19	<u>L8</u>
<u>L7</u>	L5 and ((temperature) with (increas\$4 or raised or enlarg\$4 or rais\$4 or chang\$4 or var\$4))	23	<u>L7</u>
<u>L6</u>	L5 and (temperature)	52	<u>L6</u>
<u>L5</u>	L4 and (correct\$6 with (detail or feature or indication or indicat\$4))	190	<u>L5</u>
<u>L4</u>	L3 and ((reference or preparatory or initial or preliminary) with imag\$4)	1830	<u>L4</u>
<u>L3</u>	L2 and (detail or feature or indication or indicat\$4)	11737	<u>L3</u>
<u>L2</u>	L1 and (measur\$7 with (site or location or area or region or interest or position or target))	13172	<u>L2</u>
<u>L1</u>	((magnetic adj resonance) or MRI or NMR)	140100	<u>L1</u>

END OF SEARCH HISTORY

[Generate Collection](#)[Print](#)**Search Results - Record(s) 1 through 19 of 19 returned.**☐ 1. Document ID: US 20030007601 A1

L9: Entry 1 of 19

File: PGPB

Jan 9, 2003

PGPUB-DOCUMENT-NUMBER: 20030007601  
PGPUB-FILING-TYPE: new  
DOCUMENT-IDENTIFIER: US 20030007601 A1

TITLE: Cone-beam computerized tomography with a flat-panel imager

PUBLICATION-DATE: January 9, 2003

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Jaffray, David A.	Windsor	MI	CA	
Wong, John W.	Bloomfield	MI	US	
Siewerdsen, Jeffrey H.	Ann Arbor		US	

US-CL-CURRENT: 378/65

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWC
Draw Desc	Image										

☐ 2. Document ID: US 20020180438 A1

L9: Entry 2 of 19

File: PGPB

Dec 5, 2002

PGPUB-DOCUMENT-NUMBER: 20020180438  
PGPUB-FILING-TYPE: new  
DOCUMENT-IDENTIFIER: US 20020180438 A1

TITLE: MRI-BASED TEMPERATURE MAPPING WITH ERROR COMPENSATION

PUBLICATION-DATE: December 5, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Froundlich, David	Haifa		IL	
Shapira, Yerucham	Rehovot		IL	

US-CL-CURRENT: 324/315; 324/309, 324/318

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWC
Draw Desc	Image										

☐ 3. Document ID: US 20020156365 A1

L9: Entry 3 of 19

File: PGPB

Oct 24, 2002

PGPUB-DOCUMENT-NUMBER: 20020156365

PGPUB-FILING-TYPE: new  
DOCUMENT-IDENTIFIER: 20020156365 A1

TITLE: MRI-guided interventional mammary procedures

PUBLICATION-DATE: October 24, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Tsekos, Nikolaos V.	Creve Coeur	MO	US	

US-CL-CURRENT: 600/411; 600/417, 606/130

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	RMCS
Draw Desc	Image									

☐ 4. Document ID: US 20020145042 A1

L9: Entry 4 of 19

File: PGPB

Oct 10, 2002

PGPUB-DOCUMENT-NUMBER: 20020145042  
PGPUB-FILING-TYPE: new  
DOCUMENT-IDENTIFIER: US 20020145042 A1

TITLE: Internet-based remote monitoring, configuration and service (RMCS) system capable of monitoring, configuring and servicing a planar laser illumination and imaging (PLIIM) based network

PUBLICATION-DATE: October 10, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Knowles, C. Harry	Moorestown	NJ	US	
Schmidt, Mark C.	Williamstown	NJ	US	
Zhu, Xiaoxun	Marlton	NJ	US	
Defoney, Shawn	Runnemede	NJ	US	
Skypala, Edward	Blackwood	NJ	US	
Tsikos, Constantine J.	Voorhees	NJ	US	
Au, Ka Man	Philadelphia	PA	US	
Schwartz, Barry E.	Haddonfield	NJ	US	
Wirth, Allan	Bedford	MA	US	
Jankevics, Andrew	Westford	MA	US	
Good, Timothy A.	Clementon	NJ	US	
Ghosh, Sankar	Glenolden	PA	US	
Schnee, Michael D.	Aston	PA	US	
Kolis, George	Pennsauken	NJ	US	
Amundsen, Thomas	Turnersville	NJ	US	
Naylor, Charles A.	Sewell	NJ	US	
Blake, Robert	Woodbury Heights	NJ	US	
Dobbs, Russell Joseph	Cherry Hill	NJ	US	
Yorsz, Jeffery	Winchester	MA	US	
Giordano, Patrick A.	Blackwood	NJ	US	
Colavito, Stephen J.	Brookhaven	PA	US	
Wilz, David W. SR.	Sewell	NJ	US	
Svedas, William	Deptford	NJ	US	
Kim, Steven Y.	Cambridge	MA	US	
Fischer, Dale M.	Voorhees	NJ	US	
Tassell, Jon Van	Winchester	MA	US	

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KMC

☐ 5. Document ID: US 20010037062 A1

L9: Entry 5 of 19

File: PGPB

Nov 1, 2001

PGPUB-DOCUMENT-NUMBER: 20010037062

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20010037062 A1

TITLE: Nuclear magnetic resonance apparatus and method

PUBLICATION-DATE: November 1, 2001

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Ehnholm, Gosta J.	Helsinki		FI	

US-CL-CURRENT: 600/414

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KMC

☐ 6. Document ID: US 6340588 B1

L9: Entry 6 of 19

File: USPT

Jan 22, 2002

US-PAT-NO: 6340588

DOCUMENT-IDENTIFIER: US 6340588 B1

TITLE: Matrices with memories

DATE-ISSUED: January 22, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Nova; Michael P.	Rancho Santa Fe	CA		
Potash; Hanan	Austin	TX		

US-CL-CURRENT: 435/287.1, 435/287.2, 435/288.1, 435/288.3, 435/288.4, 435/288.7, 530/300, 530/334, 530/350, 536/23.1, 536/24.3, 536/25.3

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KMC

☐ 7. Document ID: US 6329139 B1

L9: Entry 7 of 19

File: USPT

Dec 11, 2001

US-PAT-NO: 6329139

DOCUMENT-IDENTIFIER: US 6329139 B1

TITLE: Automated sorting system for matrices with memory

DATE-ISSUED: December 11, 2001

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Nova; Michael P.	Rancho Santa Fe	CA		
Lillig; John E.	Alamo	CA		
Karunaratne; Kanchana Sanjaya Gunsekera	San Diego	CA		
Ewing; William	San Diego	CA		
Satoda; Yozo	San Diego	CA		
Potash; Hanan	Austin	TX		

US-CL-CURRENT: 435/6; 209/597, 209/604, 702/19, 702/20

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWIC
Draw Desc	Image									

☐ 8. Document ID: US 6320379 B1

L9: Entry 8 of 19

File: USPT

Nov 20, 2001

US-PAT-NO: 6320379

DOCUMENT-IDENTIFIER: US 6320379 B1

TITLE: Nuclear magnetic resonance apparatus

DATE-ISSUED: November 20, 2001

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Young; Ian R.	Marlborough			GB

US-CL-CURRENT: 324/309; 600/421

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWIC
Draw Desc	Image									

☐ 9. Document ID: US 6319668 B1

L9: Entry 9 of 19

File: USPT

Nov 20, 2001

US-PAT-NO: 6319668

DOCUMENT-IDENTIFIER: US 6319668 B1

TITLE: Method for tagging and screening molecules

DATE-ISSUED: November 20, 2001

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Nova; Michael P.	Rancho Santa Fe	CA		
Potash; Hanan	La Jolla	CA		
Xiao; Xiao-Yi	San Diego	CA		
Parandoosh; Zahra	San Diego	CA		
David; Gary S.	La Jolla	CA		

US-CL-CURRENT: 435/6; 365/183, 435/287.2, 435/288.7, 435/7.1, 530/333, 530/334, 536/24.3, 536/25.3, 711/1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWIC
Draw Desc	Image									

☐ 10. Document ID: US 6284459 B1

L9: Entry 10 of 19

File: USPT

Sep 4, 2001

US-PAT-NO: 6284459

DOCUMENT-IDENTIFIER: US 6284459 B1

TITLE: Solid support matrices with memories and combinatorial libraries therefrom

DATE-ISSUED: September 4, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Nova; Michael P.	Rancho Santa Fe	CA		
Senyei; Andrew E.	La Jolla	CA		
Xiao; Xiao-Yi	San Diego	CA		
Zhao; Chanfeng	San Diego	CA		
Potash; Hanan	La Jolla	CA		

US-CL-CURRENT: 435/6; 422/68.1, 435/287.1, 435/287.2, 435/288.1, 435/288.3, 435/288.4, 435/7.1, 436/501, 436/519, 436/520, 436/527, 436/533, 436/534, 436/535, 530/350, 530/354

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWIC
Draw Desc	Image									

☐ 11. Document ID: US 6100026 A

L9: Entry 11 of 19

File: USPT

Aug 8, 2000

US-PAT-NO: 6100026

DOCUMENT-IDENTIFIER: US 6100026 A

TITLE: Matrices with memories and uses thereof

DATE-ISSUED: August 8, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Nova; Michael P.	Rancho Santa Fe	CA		
Senyei; Andrew E.	La Jolla	CA		
Potash; Hanan	La Jolla	CA		

US-CL-CURRENT: 435/6; 422/119, 422/58, 422/68.1, 435/287.1, 435/287.2, 435/288.1, 435/288.3, 435/7.1, 435/7.2, 435/7.3, 435/7.4

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWIC
Draw Desc	Image									

☐ 12. Document ID: US 6017496 A

L9: Entry 12 of 19

File: USPT

Jan 25, 2000

US-PAT-NO: 6017496  
DOCUMENT-IDENTIFIER: 6017496 A

TITLE: Matrices with memories and uses thereof

DATE-ISSUED: January 25, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Nova; Michael P.	Santa Fe	CA		
Parandoosh; Zahra	San Diego	CA		
Senyei; Andrew E.	La Jolla	CA		
Xiao; Xiao-Yi	San Diego	CA		
David; Gary S.	La Jolla	CA		
Satoda; Yozo	San Diego	CA		
Zhao; Chanfeng	San Diego	CA		
Potash; Hanan	La Jolla	CA		

US-CL-CURRENT: 422/68.1; 422/102, 422/104, 422/107, 422/108, 422/50, 422/58, 422/99, 435/6, 435/7.1, 702/22

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KMC
Draw Desc	Image									

☐ 13. Document ID: US 5961923 A

L9: Entry 13 of 19

File: USPT

Oct 5, 1999

US-PAT-NO: 5961923  
DOCUMENT-IDENTIFIER: US 5961923 A

TITLE: Matrices with memories and uses thereof

DATE-ISSUED: October 5, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Nova; Michael P.	Rancho Santa Fe	CA		
Parandoosh; Zahra	San Diego	CA		
Senyei; Andrew E.	La Jolla	CA		
Xiao; Xiao-Yi	San Diego	CA		
David; Gary S.	La Jolla	CA		
Satoda; Yozo	San Diego	CA		
Zhao; Chanfeng	San Diego	CA		
Potash; Hanan	La Jolla	CA		

US-CL-CURRENT: 422/68.1; 422/102, 422/104, 422/55, 422/57, 422/58, 422/82.05, 436/164, 436/165, 436/518, 436/524, 436/528, 436/531, 702/150, 702/19, 702/28

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KMC
Draw Desc	Image									

☐ 14. Document ID: US 5841288 A

L9: Entry 14 of 19

File: USPT

Nov 24, 1998

US-PAT-NO: 5841288  
DOCUMENT-IDENTIFIER: US 5841288 A



TITLE: Two-dimensional microwave imaging apparatus and methods

DATE-ISSUED: November 24, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Meaney; Paul M.	Windsor	VT		
Paulsen; Keith D.	Hanover	NH		

US-CL-CURRENT: 324/639; 324/637, 600/407, 600/430

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KMC
Draw Desc	Image									

☐ 15. Document ID: US 5771261 A

L9: Entry 15 of 19

File: USPT

Jun 23, 1998

US-PAT-NO: 5771261

DOCUMENT-IDENTIFIER: US 5771261 A

TITLE: Telethermometric psychological evaluation by monitoring of changes in skin perfusion induced by the autonomic nervous system

DATE-ISSUED: June 23, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Anbar; Michael	Amherst	NY	14221-1823	

US-CL-CURRENT: 374/45; 600/474, 600/549

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KMC
Draw Desc	Image									

☐ 16. Document ID: US 5617861 A

L9: Entry 16 of 19

File: USPT

Apr 8, 1997

US-PAT-NO: 5617861

DOCUMENT-IDENTIFIER: US 5617861 A

TITLE: Magnetic resonance spectral analysis of the brain for diagnosis of clinical conditions

DATE-ISSUED: April 8, 1997

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Ross; Brian	Altadena	CA		
Ernst; Thomas	Gundelfingen			DE
Kreis; Roland	Boll			CH

US-CL-CURRENT: 600/410

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KMC
Draw Desc	Image									

☐ 17. Document ID: US 5483604 A

L9: Entry 17 of 19

File: USPT

Jan 9, 1996

US-PAT-NO: 5483604

DOCUMENT-IDENTIFIER: US 5483604 A

TITLE: Monitoring changes in image characteristics

DATE-ISSUED: January 9, 1996

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Salisbury; Richard	Littlebury			GB

US-CL-CURRENT: 382/152; 382/194

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWC
Draw Desc	Image									

☐ 18. Document ID: US 5353239 A

L9: Entry 18 of 19

File: USPT

Oct 4, 1994

US-PAT-NO: 5353239

DOCUMENT-IDENTIFIER: US 5353239 A

TITLE: Method of processing image signal by optical gamma correction curve and apparatus for performing the same

DATE-ISSUED: October 4, 1994

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kashiwagi; Kazuhiro	Hino			JP

US-CL-CURRENT: 382/276

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWC
Draw Desc	Image									

☐ 19. Document ID: US 4970457 A

L9: Entry 19 of 19

File: USPT

Nov 13, 1990

US-PAT-NO: 4970457

DOCUMENT-IDENTIFIER: US 4970457 A

TITLE: MRI compensated for spurious rapid variations in static magnetic field during a single MRI sequence

DATE-ISSUED: November 13, 1990

INVENTOR-INFORMATION:

NAME	CITY	ST	ZIP CODE	COUNTRY
Kaufman; Leon	San Francisco	CA		
Crooks; Lawrence E.	Richmond	CA		
Hale; James D.	Berkeley	CA		
Kramer; David M.	San Rafael	CA		
Hake; Kristen	South San Francisco	CA		
Avram; Heckor	Foster City	CA		
Wummer; Joel	San Francisco	CA		

US-CL-CURRENT: 324/309; 324/307, 324/313

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KVMC
Draw Desc	Image									

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Term	Documents
SIGNAL.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	3009804
SIGNALS.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	1503217
ZONE.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	563690
ZONES.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	206378
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POSITIONAA.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	1
POSITIONABE.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	3
POSITIONABLE.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	59199
POSITIONABLY.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	770
(L8 AND (SIGNAL OR POSITION\$4 OR ZONE)).USPT,PGPB,JPAB,EPAB,DWPI,TDBD.	19

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L9: Entry 17 of 19

File: USPT

Jan 9, 1996

DOCUMENT-IDENTIFIER: US 5483604 A

TITLE: Monitoring changes in image characteristics

Abstract Text (1):

Changes in characteristics of an image are monitored at a predetermined position or zone (12, 13) of the image. The image is corrected to allow for changes in the monitored position or zone (12, 13). This is done with reference to observed deviation in coordinates of reference points (9-11) of the image. In a preferred embodiment, successive thermographic images are obtained of electronic equipment, such as a printed circuit board, and the image as displayed on a VDU screen (4) is scanned at a predetermined point (12) or along a predetermined line (13) to monitor temperature-dependent color characteristics of the image, whereby the development of hotspots can be monitored. Changes in the coordinates of landmark positions (9-11) on the image are noted and are used to correct the positions of successive images on the screen so that the monitored point (12) or line (13) is always in the same position. This correction is achieved by transformation of data using spread sheet software.

Brief Summary Text (5):

In the case of a series of images, temperature measurements are made over a period of time and the results are assessed to reveal a progressive or sudden change. The change is used to predict maintenance or to identify a failure or local fault. Assessment of change may be made by means of an extracted value from the image, and this value may be a direct measurement or an indirect quantification based on a pattern or distribution such as a standard deviation.

Brief Summary Text (6):

It is possible to apply similar condition monitoring techniques to images other than infrared thermographs. For example, ultrasonics, video, vibration analysis, radiography, nuclear magnetic resonance imaging may be used.

Brief Summary Text (7):

There is the problem with known techniques that it may be difficult to recognise individual features in the image, or, in the case where successive images are compared to achieve accurate registration or alignment of features. In this respect, monitoring surveys are commonly carried out with portable instruments and with such an instrument it is difficult to obtain an image which accurately has a desired registration.

Brief Summary Text (10):

Registration errors reduce the ability for accurate image comparison, automated analysis, or difference measurements. Furthermore, a measurement made on the image at a given screen coordinate position will not correspond to the same physical location on the same subject when it is viewed from a different position.

Brief Summary Text (11):

An object of the present invention is to provide an improved image monitoring technique whereby the above problems associated with the identification and registration of image features can be overcome or at least minimised.

Brief Summary Text (12):

According to the invention therefore there is provided a method of monitoring changes in image characteristics comprising the steps of generating an image of a subject using imaging equipment; determining coordinates of reference points on said image; monitoring characteristics of a predetermined position or zone of said image relative to said coordinates; and comparing said determined characteristics with predetermined reference characteristics; characterised by the steps of determining any deviation between the determined coordinates of the reference points and pre-determined coordinates thereof, and correcting for the deviation in effecting

the said monitoring of characteristics of the predetermined position or zone.

Brief Summary Text (13):

With this arrangement, in effect, a misaligned image can be brought into registration before it is examined for condition monitoring purposes. Images can be standardised and analysed after having been corrected for variations in disposition between the subject, imaging equipment and the user of such equipment or observer. Thus, measurement of the distance or distances from the imaging equipment to a two or three dimensional subject and the relative angles of view need not be made and direct spacial measurements from the image can be obtained from the image in 'real world' coordinates i.e. distances between parts of the image in meters rather than in pixels.

Brief Summary Text (14):

The method may be applied to a single event technique where a single image is obtained and the reference points are related to predetermined such points and the changes in the monitored characteristics are determined relative to predetermined characteristics derived e.g. from ambient characteristics or predicted characteristics or the like.

Brief Summary Text (15):

Alternatively and preferably however successive images are obtained at different times, the reference points on each successive image are related to predetermined points on the previous image or images, and the changes in monitored characteristics on each successive image are determined relative to the characteristics for the previous image or images.

Brief Summary Text (18):

determining coordinates of reference points on said image;

Brief Summary Text (19):

determining predetermined characteristics of a predetermined position or zone of said image relative to said coordinates;

Brief Summary Text (21):

determining coordinates of the said reference points on the said second image;

Brief Summary Text (23):

identifying the location of the said predetermined position or zone on the second image by reference to the location thereof on the first image and the said coordinates difference; and

Brief Summary Text (24):

comparing the said predetermined characteristics of the said predetermined position or zone for the first and second images to determine a difference therebetween.

Brief Summary Text (25):

In practice the method of the invention will preferably be performed with computer apparatus incorporating a screen on which an obtained image is visually displayed in conjunction with a cursor or pointer arrangement for locating the said reference points, and establishing the coordinates thereof, on the displayed image.

Brief Summary Text (26):

Most preferably the arrangement is such that the image is automatically visually re-aligned on the screen, after the coordinates of the reference points have been established, to bring such reference points accurately into registration with the predetermined coordinates thereof.

Brief Summary Text (27):

The said characteristics of the corrected image can be monitored in any suitable manner. This could be done visually e.g. by identification of points or zones of colour change indicating hot spots or the like. Preferably however the image or zones or points thereof are scanned to permit automatic monitoring of temperature changes or other variations in characteristics. For example, using a cursor or pointer or the like a line may be identified on the image and variations in characteristics along the line may be calculated. There may be an automatic output of appropriate data in the form of a graph, or lists of numbers which may be shown as a screen display or which may be printed out. Where provision is made for an automatic hard copy print-out, this may also include printed pictures of the image. The above mentioned equipment may also include word processing, database, or similar software.

Brief Summary Text (28):

The above mentioned correction or image transformation steps to compensate for deviations in the coordinates of the reference points preferably effected on a discrete area-by-area or pixel-by-pixel basis. Similarly, monitoring of characteristics and determination of changes is preferably also done on a discrete area-by-area or pixel-by-pixel basis. Conveniently, in this case, spread sheet software may be used, i.e. software permitting entry of numerical data into individual cells with provision being made for automatic computations to be made on such numerical data in accordance with predetermined mathematical relationships or equations for each cell. This provides a convenient means of processing data whilst storing the data in readily accessible and readily utilisable form. Thus in addition to transforming and monitoring changes in the characteristics of the image the spread sheet provides a means of storing image data for subsequent retrieval and also can easily interface with wordprocessor or similar software to facilitate production of screen displays and hard copy print-outs.

Brief Summary Text (29):

Thus, and in accordance with a yet further aspect of the present invention there is provided a method of monitoring changes in image characteristics comprising the steps of obtaining an image of a subject using imaging equipment, deriving data from the image in discrete units, storing said data, transforming said stored data to correct for deviations in image coordinates, monitoring changes in said transformed stored data, and producing an output representative of such data changes, wherein the data is stored, and processed using spread sheet software.

Brief Summary Text (30):

The invention also provides apparatus for use in performing the above described methods comprising imaging equipment for producing data representative of an image of a subject, computer equipment for storing and processing said data, said computer equipment including a screen arranged to display said image, cursor means arranged for identifying reference points on the displayed image and to establish coordinates of said points, monitoring means arranged for monitoring characteristics of the image at a predetermined point or zone thereon, comparing means arranged for comparing said characteristics with predetermined reference characteristics; and deviation means arranged for determining any deviation between the determined coordinates of the reference points and predetermined coordinates thereof and for correcting for the deviation in effecting the said monitoring of characteristics of the predetermined position or zone.

Detailed Description Text (7):

A quantised (digital) image is displayed on the screen 4. Three recognisable features 9, 10, 11 are identified on the image. These may be natural landmarks on the subject (e.g. specific components on the printed circuit board) or reference markers pre-placed to assist feature identification.

Detailed Description Text (8):

The X, Y screen coordinates of each feature 9, 10, 11 are stored by moving a cursor (or cross or spot) across the screen (e.g. with a mouse) until it is on top of the respective feature and then operating a control (e.g. a mouse button or keyboard key) to cause the coordinates to be entered.

Detailed Description Text (9):

A further cursor 12 (or cross or spot) is similarly moved to overlies a point on the printed circuit board which is to be given special attention because it is, or is likely to, overheat. A cursor line 13 is moved to a position across the board along which the temperature is to be monitored. The coordinates of the further cursor 12 and the cursor line 13 are also entered.

Detailed Description Text (13):

As shown in FIG. 3, the second image, as obtained, is not precisely aligned with the first image. This is corrected by placing the cursors 9, 10, 11, over the markers or landmark features on the image and entering the X, Y coordinates. These X, Y coordinates are compared with the previously entered coordinates and the difference is computed. This difference is used to perform a perspective transformation on the mis-aligned second image, pixel-by-pixel. The data stored for the image is changed to corrected data and, correspondingly, the image on the screen is moved so that the image appears in the same position and with the same perspective as the first image.

Detailed Description Text (14):

The image is transformed to the absolute positional placement of the subject in space (or real world). The temperature at the cursor point 12 and along the line 13 can then be measured and compared with the previous values. Trends can therefore be identified and predicted and a report can be printed out using the printer 7.

#### Detailed Description Text (15):

The procedure can be repeated for further, successive images. In more detail, the above procedure is performed as follows:

#### Detailed Description Text (16):

Perspective transformation to ensure that each successive image is correctly aligned with the initial reference image is performed as follows: The transformation maps pixel positions in the images file to real world positions using linear scaling in the X and Y directions. Thus a general pixel x,y is mapped to a world position X, Y by a relationship:

#### Detailed Description Text (17):

where a, b, c, d, e and f are constants that characterise the transformation. If the image is considered to be a plane this transformation will compensate for changes in perspective between the world coordinate axis and the pixels of the image i.e. changes in the position of the camera. In the software the image is transformed to display on the screen with the world perspective i.e. with the X and Y world axes orthogonal. The transformation is fully defined by locating three corresponding positions in the two coordinate systems. Once the three positions have been identified and the corresponding points in the real world established, the link to real world positions is defined for all pixels in the image. The above may be used to directly calibrate the X and Y positions in the real world e.g. link the image to real measurements made in suitable units. However it may also be used to convert the view of an image to the perspective viewpoint of an earlier image of the same object. The requirement here is simply that the same three points are picked out of each image and the same corresponding three world positions are entered. The world positions are arbitrary and for simplicity the pixel positions from the first image can be used as world coordinates and are entered for the corresponding points on the second image. Again location identified with real world coordinates will be mapped to corresponding positions in the pixel data. In this way features identified in the first image will also be picked out on the second image.

#### Detailed Description Text (18):

Measurement tools of image content such as Max, Min, Mean value within specified areas, profile intensities along a line in the image or histogram types of analysis of samples within a defined area, can then be made at required locations on the image and the results together with the details and positions of the measurement tools stored in a data file. Settings for the operating, measurement and image display parameters can also be recorded in the file with text labels or comments. The settings file is stored as a named template either as a data file or in the form of a spreadsheet.

#### Detailed Description Text (20):

When a second or subsequent image of the same or similar object is analysed, the image is displayed on screen and the named template file is restored. The three location cursors are shown on the screen. Each location cursor is moved by the operator to the respective feature on the image. The two dimensional transformation is then applied. The re-registration is performed and provides replication or interpolation of data between adjacent pixels. The previously defined measurement tools from the template can then be re-applied to the new image. Since the image is now identically registered with the original, no changes are required to the positions of the measurement tools and the data from each tool can be extracted automatically. Images can be differenced (subtracted) one from another with great accuracy and relative changes within successive images can be shown and measured. Variations in sensor positions can be compensated for and features' positions identified using values which relate directly to their physical location in space terms. Since it is not uncommon for such images to be distorted or non-linear in respect to their spatial orientation or aspect ratio, a digitised visual image can be used for the reference template and all re-alignment of the sensor images made to that image.

#### Detailed Description Text (21):

Custom printed reports can be made by linking image(s) and analysis results from the data files (spreadsheets), or directly from the images, into a wordprocessor. Specific document templates can be created in the wordprocessor to allow automated generation of pre-defined reports. In this way, details extracted from the image, including the colourised or monochrome image itself, can be transferred into a boilerplate text. An extensive database can be created from the data files (spreadsheets) to allow data trending to be carried out.

#### Detailed Description Text (22):

Fully automated image processing can also be carried out at the time of site

inspection without the need to make a permanently stored image file. By way of example, the following procedure can be carried out: The image is frozen temporarily on screen in front of the operator. The reference file/spreadsheet for that particular subject is loaded and the position cursors shown on the frozen image. The position cursors are then moved onto their features by the operator. The image transformation then takes place. The measurement tools from the reference template file contains the tools used and their image positions and since the image has been transformed to occupy the same space as the original template image, will now apply to the correct location on the new image. The data is extracted automatically from the test image and filed for permanent record purposes or data analysis/trending. Since the relevant information has now been extracted from the image, the image itself can then be discarded and the observer can move to the next location to repeat the process.

#### Detailed Description Text (23):

It is of course to be understood that the invention is not intended to be restricted to the details of the above embodiment which are described by way of example only.

#### CLAIMS:

1. A method of monitoring hot spots in electrical or electronic equipment using portable imaging equipment which moves from a first position to a second position comprising:

- a) generating first and second images of the electrical or electronic equipment using said portable imaging equipment from said first and second positions respectively,
- b) determining coordinates of reference points on said first and second images,
- c) monitoring the temperature of a predetermined position or zone of said first and second images relative to the coordinates for the image,
- d) comparing each said monitored temperature with a respective predetermined reference temperature,
- e) determining any deviation between the determined coordinates of the reference points in said first and second images and predetermined coordinates therefor caused by non-coincidence of said first and second positions, and
- f) correcting for the deviation by a transformation of said second image while effecting the said monitoring of temperature of the predetermined position or zone so as to allow a direct comparison of temperature of said position or zone in said first and second images.

2. A method according to claim 1 which is performed with computer apparatus incorporating a screen on which an obtained image is visually displayed in conjunction with a cursor or pointer arrangement for locating the said reference points and establishing the coordinates thereof, on the displayed image.

3. A method according to claim 2 wherein said second image is automatically visually re-aligned on the screen, after the coordinates of the reference points have been established, to bring such reference points accurately into registration with the predetermined coordinates thereof.

7. A method of monitoring hot spots in electrical or electronic equipment using portable imaging equipment comprising:

- a) generating a first image of the electrical or electronic equipment with portable imaging equipment at a first position of said portable imaging equipment, said portable imaging equipment comprising infrared thermography equipment using an infrared sensor,
- b) moving said portable imaging equipment from said first position to a second position,
- c) generating a second image of the electrical or electronic equipment at said second position,
- d) determining coordinates of reference points on said first and second images,
- e) monitoring the temperature of a predetermined position or zone of said first and second images relative to the coordinates for the image,



f) comparing each said monitored temperature with a respective predetermined reference temperature,

g) determining any deviation between the determined coordinates of the reference points in said first and second images and predetermined coordinates therefor caused by non-coincidence of said first and second positions, and

h) correcting for the deviation by a transformation of said second image while effecting the said monitoring of temperature of the predetermined position or zone so as to allow a direct comparison of temperature of said position or zone in said first and second images.

10. A method according to claim 7 which is performed with computer apparatus incorporating a screen on which an obtained image is visually displayed in conjunction with a cursor or pointer arrangement for locating the said reference points, and establishing the coordinates thereof, on the displayed image.

11. A method according to claim 10 wherein said second image is automatically visually re-aligned on the screen, after the coordinates of the reference points have been established, to bring such reference points accurately into registration with the predetermined coordinates thereof.

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L16: Entry 1 of 5

File: USPT

Oct 2, 2001

US-PAT-NO: 6298259

DOCUMENT-IDENTIFIER: US 6298259 B1

TITLE: Combined magnetic resonance imaging and magnetic stereotaxis surgical apparatus and processes

DATE-ISSUED: October 2, 2001

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kucharczyk; John	Minneapolis	MN	55403	
Gillies; George T.	Earlsville	VA	22936-9590	

US-CL-CURRENT: 600/411; 324/307, 324/309, 324/310, 600/415, 600/417, 600/420, 600/429, 606/130

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWC
Draw Desc	Image									

☐ 2. Document ID: US 6246898 B1

L16: Entry 2 of 5

File: USPT

Jun 12, 2001

US-PAT-NO: 6246898

DOCUMENT-IDENTIFIER: US 6246898 B1

TITLE: Method for carrying out a medical procedure using a three-dimensional tracking and imaging system

DATE-ISSUED: June 12, 2001

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Vesely; Ivan	Cleveland Heights	OH		
Smith; Wayne	London			CA
Klein; George	London			CA
Burkhoff; Daniel	Tenafly	NJ		

US-CL-CURRENT: 600/424; 600/429, 600/439, 606/130

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWC
Draw Desc	Image									

☐ 3. Document ID: US 6061587 A

US-PAT-NO: 6061587  
DOCUMENT-IDENTIFIER: US 6061587 A

TITLE: Method and apparatus for use with MR imaging

DATE-ISSUED: May 9, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kucharczyk; John	Edina	MN		
Moseley; Michael E.	Redwood City	CA		

US-CL-CURRENT: 600/411; 600/431, 600/432, 600/433, 604/151, 604/152, 604/153, 604/154, 604/155, 604/21, 604/93.01

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KMC
Draw Desc	Image									

☐ 4. Document ID: US 6026316 A

L16: Entry 4 of 5

File: USPT

Feb 15, 2000

US-PAT-NO: 6026316  
DOCUMENT-IDENTIFIER: US 6026316 A

TITLE: Method and apparatus for use with MR imaging

DATE-ISSUED: February 15, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kucharczyk; John	Edina	MN		
Moseley; Michael E.	Redwood City	CA		

US-CL-CURRENT: 600/420; 324/309

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KMC
Draw Desc	Image									

☐ 5. Document ID: US 5797849 A

L16: Entry 5 of 5

File: USPT

Aug 25, 1998

US-PAT-NO: 5797849  
DOCUMENT-IDENTIFIER: US 5797849 A

TITLE: Method for carrying out a medical procedure using a three-dimensional tracking and imaging system

DATE-ISSUED: August 25, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Vesely; Ivan	Cleveland Heights	OH		
Smith; Wayne	London			CA

US-CL-CURRENT: 600/461

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DETAIL.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	1420143
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L22: Entry 1 of 3

File: USPT

Oct 2, 2001

US-PAT-NO: 6298259

DOCUMENT-IDENTIFIER: US 6298259 B1

TITLE: Combined magnetic resonance imaging and magnetic stereotaxis surgical apparatus and processes

DATE-ISSUED: October 2, 2001

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kucharczyk; John	Minneapolis	MN	55403	
Gillies; George T.	Earlsville	VA	22936-9590	

US-CL-CURRENT: 600/411; 324/307, 324/309, 324/310, 600/415, 600/417, 600/420, 600/429, 606/130

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWIC
Draw Desc	Image									

☐ 2. Document ID: US 6061587 A

L22: Entry 2 of 3

File: USPT

May 9, 2000

US-PAT-NO: 6061587

DOCUMENT-IDENTIFIER: US 6061587 A

TITLE: Method and apparatus for use with MR imaging

DATE-ISSUED: May 9, 2000

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kucharczyk; John	Edina	MN		
Moseley; Michael E.	Redwood City	CA		

US-CL-CURRENT: 600/411; 600/431, 600/432, 600/433, 604/151, 604/152, 604/153, 604/154, 604/155, 604/21, 604/93.01

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWIC
Draw Desc	Image									

☐ 3. Document ID: US 6026316 A

L22: Entry 3 of 3

File: USPT

Feb 15, 2000

US-PAT-NO: 6026316  
DOCUMENT-IDENTIFIER: 6026316 A

TITLE: Method and apparatus for use with MR imaging

DATE-ISSUED: February 15, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kucharczyk; John	Edina	MN		
Moseley; Michael E.	Redwood City	CA		

US-CL-CURRENT: 600/420; 324/309

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KUIC
Draw Desc	Image									

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Term	Documents
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HEATAAT.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	1
HEATABL.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	1
HEATABLE.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	11685
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HEATAD.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	4
HEATAED.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	6
HEATAER.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	1
HEATAGE.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	5
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L25: Entry 1 of 11

File: PGPB

Sep 5, 2002

PGPUB-DOCUMENT-NUMBER: 20020122806  
PGPUB-FILING-TYPE: new  
DOCUMENT-IDENTIFIER: US 20020122806 A1

TITLE: Compositions and methods for in situ and in vivo imaging of cells and tissues

PUBLICATION-DATE: September 5, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Chinnaiyan, Arul M.	Canton	MI	US	
Rehemtulla, Alnawaz	Plymouth	MI	US	
Ross, Brian D.	Ann Arbor	MI	US	

US-CL-CURRENT: 424/178.1; 435/325, 536/23.5

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KMC
Draw Desc	Image									

☐ 2. Document ID: US 20020073441 A1

L25: Entry 2 of 11

File: PGPB

Jun 13, 2002

PGPUB-DOCUMENT-NUMBER: 20020073441  
PGPUB-FILING-TYPE: new  
DOCUMENT-IDENTIFIER: US 20020073441 A1

TITLE: Compositions and methods for detecting proteolytic activity

PUBLICATION-DATE: June 13, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Ross, Brian D.	Ann Arbor	MI	US	
Rehemtulla, Alnawaz	Plymouth	MI	US	

US-CL-CURRENT: 800/18; 435/189, 435/354, 435/4, 530/350, 536/23.2

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KMC
Draw Desc	Image									

☐ 3. Document ID: US 6377834 B1

L25: Entry 3 of 11

File: USPT

Apr 23, 2002

US-PAT-NO: 6377834

DOCUMENT-IDENTIFIER: 6377834 B1

TITLE: Real time in vivo measurement of temperature changes with contrast enhanced NMR imaging

DATE-ISSUED: April 23, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Zhou; Yong	Waukesha	WI		
Frayne; Richard	Calgary			CA

US-CL-CURRENT: 600/412; 324/315

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KMOC
Draw Desc	Image									

☐ 4. Document ID: US 6270463 B1

L25: Entry 4 of 11

File: USPT

Aug 7, 2001

US-PAT-NO: 6270463

DOCUMENT-IDENTIFIER: US 6270463 B1

TITLE: System and method for measuring temperature in a strong electromagnetic field

DATE-ISSUED: August 7, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Morris, Sr.; G. Ronald	Bay Shore	NY		
Valentine; James W.	Spokane	WA		

US-CL-CURRENT: 600/549

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KMOC
Draw Desc	Image									

☐ 5. Document ID: US 6194899 B1

L25: Entry 5 of 11

File: USPT

Feb 27, 2001

US-PAT-NO: 6194899

DOCUMENT-IDENTIFIER: US 6194899 B1

TITLE: Temperature monitoring method, temperature monitoring apparatus and magnetic resonance apparatus

DATE-ISSUED: February 27, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Ishihara; Yasutoshi	Tokyo			JP
Umeda; Masaaki	Kawasaki			JP
Watanabe; Hidehiro	Yokohama			JP
Okamoto; Kazuya	Yono			JP

US-CL-CURRENT: 324/315; 600/412



☐ 6. Document ID: US 6032068 A

L25: Entry 6 of 11

File: USPT

Feb 29, 2000

US-PAT-NO: 6032068

DOCUMENT-IDENTIFIER: US 6032068 A

TITLE: Non-invasive measurement of frozen tissue temperature using MRI signal

DATE-ISSUED: February 29, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Daniel; Bruce L.	Palo Alto	CA		
Butts; Rosemary Kim	San Francisco	CA		

US-CL-CURRENT: 600/412; 324/315

☐ 7. Document ID: US 5916161 A

L25: Entry 7 of 11

File: USPT

Jun 29, 1999

US-PAT-NO: 5916161

DOCUMENT-IDENTIFIER: US 5916161 A

TITLE: Magnetic resonance imaging apparatus with temperature measurement function

DATE-ISSUED: June 29, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Ishihara; Yasutoshi	Tokyo			JP
Okamoto; Kazuya	Tokyo			JP

US-CL-CURRENT: 600/410; 324/315, 600/412

☐ 8. Document ID: US 5711300 A

L25: Entry 8 of 11

File: USPT

Jan 27, 1998

US-PAT-NO: 5711300

DOCUMENT-IDENTIFIER: US 5711300 A

TITLE: Real time in vivo measurement of temperature changes with NMR imaging

DATE-ISSUED: January 27, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Schneider; Erika	Rexford	NY		
Cline; Harvey Ellis	Schenectady	NY		
Watkins; Ronald Dean	Schenectady	NY		
Washburn; Sheila Srinivasan	New Berlin	WI		
Hardy; Christopher Judson	Schenectady	NY		

US-CL-CURRENT: 600/412

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KMC
Draw Desc	Image									

☐ 9. Document ID: US 5541511 A

L25: Entry 9 of 11

File: USPT

Jul 30, 1996

US-PAT-NO: 5541511

DOCUMENT-IDENTIFIER: US 5541511 A

TITLE: Method of magnetic resonance imaging for the production of rare images with additional preparation of the magnetization for contrast variation

DATE-ISSUED: July 30, 1996

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Hennig; Jurgen	79100 Freiburg im Breisgau			DE

US-CL-CURRENT: 324/309; 324/314, 600/413

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KMC
Draw Desc	Image									

☐ 10. Document ID: US 5378987 A

L25: Entry 10 of 11

File: USPT

Jan 3, 1995

US-PAT-NO: 5378987

DOCUMENT-IDENTIFIER: US 5378987 A

TITLE: Method and apparatus for non-invasive measurement of temperature distribution within target body using nuclear magnetic resonance imaging

DATE-ISSUED: January 3, 1995

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Ishihara; Yasutoshi	Kanagawa			JP
Sato; Kozo	Kanagawa			JP

US-CL-CURRENT: 324/315; 600/412

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KMC
Draw Desc	Image									

☐ 11. Documen : EP 560397 A1 DE 69331073 E US 8987 A JP 3160351 B2 EP  
560397 B1

L25: Entry 11 of 11

File: DWPI

Sep 15, 1993

DERWENT-ACC-NO: 1993-289890

DERWENT-WEEK: 200205

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TITLE: Measurement of internal temperature distribution using NMR - obtaining chemical shift data from target body at each voxel with and without temperature change to enable construction of image of temp. distribution.

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KMIC
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(5378987).USPT,PGPB,JPAB,EPAB,DWPI,TDBD.	11

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